CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 96-015

WASTE DISCHARGE REQUIREMENTS
FOR
THE UNITED STATES AIR FORCE
CLOSURE OF BEALE AIR FORCE BASE LANDFILLS NO. 2 AND NO. 3
CLASS III LANDFILLS
YUBA COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Board) finds that:

1. Beale Air Force Base (hereafter Base) is owned and operated by the United States Air Force (hereafter Discharger). The Base is about 10 miles east of Marysville in Yuba County and covers about 23,000 acres.

2. There are five solid waste landfills at the Base. Two of the solid waste landfills, Nos. 2 and 3, were previously regulated by Waste Discharge Requirements (WDRs) Order No. 79-012, which are no longer in conformance with Title 23, California Code of Regulations (CCR), Division 3, Chapter 15 (hereafter 23 CCR). All five solid waste landfills are described as follows:

Landfill No. 1	Unclassified Landfill. This landfill was operated during the 1940s. The landfill occupies a four acre site near the wastewater treatment plant.
Landfill No. 2	Class III Landfill (Municipal Solid Waste Landfill). This landfill was operated from the early 1950s until 1980 and received photowaste treatment plant sludge, unknown amounts of petroleum/chemical wastes, residential and general base refuse. Dirt, wood, and other inert construction and ground maintenance debris was disposed of from 1980 until the fall of 1993 at the landfill. Landfill No. 2 covers 56 acres and was operated as a trench and fill with 15 to 20-foot deep trenches.
Landfill No. 3	Class III Landfill (Municipal Solid Waste Landfill) which accepted refuse from residences and other base activities between 1981 and the fall of 1993. Landfill No. 3 covers about 27 acres. Wastes were discharged to trenches 15 to 25 feet deep, 40 to 60 feet wide at the top, and 600 to 2000 feet in length. A preliminary closure and postclosure plan was initially submitted on 20 August 1990. The preliminary closure and postclosure plan was resubmitted on 27 September 1993.
Landfill No. 4	Unclassified Landfill. This landfill was operated during the 1960s and 1970s as a trench and fill operation. The trenches were burned to reduce volume. Waste materials are believed to consist of construction debris and other nonhazardous materials.

Ordnance Disposal	Unclassified Landfill. Unused munitions and ordnance were detonated or burned in a bunker at the site and the remains were discharged into a trench covering less than one acre. Until 1991 accumulated debris and sediment were periodically excavated from the trench and disposed of off-site. Debris was not placed in the trench after 1991. In the fall of 1993, the Air Force regraded the site and filled in the trench. Dates of waste discharge are unknown. Hazardous levels of heavy metals have been found in soils.

3. The Discharger has discharged municipal, commercial, and industrial solid wastes in Landfills Nos. 2 and 3 (See Attachments C, D, and E for landfill location and site maps).

4. The federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, authorizes development of nationwide minimum standards for disposal sites for municipal solid waste (MSW), including criteria for sanitary landfills.

5. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated regulations that apply, in California, to dischargers who own or operate Class III landfill units at which municipal solid waste is discharged (MSWLF), regardless of whether or not a permit is issued (Title 40, Code of Federal Regulations [hereafter 40 CFR], Parts 257 and 258, "federal MSW regulations"). The majority of the federal MSW regulations became effective on 9 October 1993.

6. These WDRs implement 40 CFR, Parts 257 and 258 for only Landfills Nos. 2 and 3. The remaining landfills are being addressed under the Installation Restoration Program (IRP), and may be required to take corrective action.

7. Attachments A through E are hereby made part of this Order.

GEOLOGY

8. The geologic setting of the Base includes alluvial and marine shelf sediments overlying metamorphic basement rocks of the Sierra Nevada foothills. The Base obtains water from nine water supply wells for base domestic and industrial usage. These wells are on the west side of the Base, along North Beale Road. The Base water supply wells screen several freshwater-bearing zones to depths of approximately 356 feet below ground surface. These freshwater-bearing zones consist of Quaternary- and Tertiary-aged fluvially-deposited clay, silt, and gravel beds which dip gently to the southwest.

9. Depth to ground water is approximately 65 to 75 feet. Ground water flow is generally to the west-southwest.

SITE DESCRIPTION

10. The Base is drained by several drainage courses including, but not limited to, Reeds Creek, Hutchinson Creek, Best Slough and Dry Creek, all of which drain to the Feather River. The beneficial uses of these creeks and the Feather River are municipal and domestic supply, agricultural supply, water contact recreation, wildlife habitat, warm and cold freshwater habitat, migration and spawning of aquatic organisms, and navigation.

11. The beneficial uses of ground water in the area of the Base are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

12. Land within 1000 feet of the landfills consists of open space and agricultural land.

13. Landfill No. 2 is partially within the 100 year floodplain.

14. The Discharger's data demonstrate that natural geologic materials between the base of the landfills and ground water may not have prevented the impairment of beneficial uses of ground water from the discharge of wastes to the landfill units during operations. Low levels of organic compounds have been intermittently detected in ground water at both Landfill No. 2 and No. 3. At Landfill No. 2, the discharger's data indicates that an upgradient source may be responsible for the low levels of organic compounds detected in the ground water both upgradient and downgradient of the landfill.

15. Benzene, toluene, ethylbenzene, dichloromethane, vinyl chloride, dichloroethene, tetrachloroethene, dichloroethene and trichloroethene (TCE) were detected in a soil gas sample collected from Landfill No. 2 in 1987. Toluene, trichloroethene, 2-butanone, 4-methyl 2-pentanone, di-n-butylphthalate, total petroleum hydrocarbons as diesel (TPH-diesel) and total petroleum hydrocarbons as gasoline (TPH-gasoline) were detected in soil samples collected from Landfill No. 2 in 1988. Low concentrations of toluene, chlorobenzene, 1,2-dichlorobenzene, dichlorodifluoromethane, ethylbenzene, trichloroethene, xylenes, Lindane, bis-2-ethylhexylphthalate, phenols and TPH-diesel have been intermittently detected in ground water and/or surface water associated with Landfill No. 2. The source and extent of the ground water and surface water degradation have not been defined.

16. In 1989, a sample of soil gas from Landfill No. 3 showed detectable levels of TCE, dichloromethane, 1,1,1-trichloroethane, 1,2-dichloroethane and tetrachloroethane. Low concentrations of arsenic, phenols, bis-2-ethylhexylphthalate, chloroform, ethylbenzene, Lindane, N-nitrosodiphenylamine, toluene, and TPH-Diesel have been intermittently detected in the ground water at Landfill No. 3. The extent of the ground water degradation at Landfill No. 3 has not been defined.

17. The Base IRP will address ground water cleanup and landfill closure activities at Landfills No. 1, 4, and the ordnance disposal area in a manner consistent with State requirements and with

the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Closure and remediation of Landfills No. 2 and 3 will be as specified in this Order.

18. Landfills No. 2 and 3 have ceased accepting wastes. General residential and base refuse was disposed of at Landfill No. 2 until 1980, although dirt, wood, and other inert construction and ground maintenance debris continued to be disposed of until October 1993. Landfill No. 3 ceased accepting wastes in October 1993. The Air Force is using remediated fuel-spill contaminated soil as part of the foundation layer for the final landfill cap.

CEQA AND OTHER CONSIDERATIONS

19. The action to revise WDRs for these landfills is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Title 14, CCR, Section 15301 for existing facilities.

20. On 9 October 1991, the USEPA promulgated regulations (40 CFR, Parts 257 and 258, "federal MSW regulations" or "Subtitle D") that apply, in California, to dischargers who own or operate Class II or Class III landfill units at which MSWLF is discharged. The majority of the federal MSW regulations became effective on the "Federal Deadline", which was 9 October 1993.

21. This Order implements

    a. the Water Quality Control Plan for the Sacramento River and the San Joaquin River Basins, Third Edition;

    b. the prescriptive standards and performance goals of 23 CCR, effective 27 November 1984, and subsequent revisions;

    c. the prescriptive standards and performance criteria of 40 CFR, Part 258 (Subtitle D of the Resource Conservation and Recovery Act); and

    d. State Water Resources Control Board Resolution No. 93-62, Policy for Regulation of Discharges of Municipal Solid Waste, adopted 17 June 1993.

PROCEDURAL REQUIREMENTS

22. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharge of wastes to land stated herein.

23. The Board has notified the Discharger and interested agencies and persons of its intention to revise the WDRs for this facility.

24. In a public hearing, the Board heard and considered all comments pertaining to this facility and discharge.

IT IS HEREBY ORDERED that Order No. 79-012 is rescinded, and The United States Air Force, its agents, assignees and successors, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS:

The discharge of "hazardous waste" or "designated waste" at this site is prohibited. For the purposes of this Order, "hazardous waste" and "designated waste" are as defined in 23 CCR, and described in Monitoring and Reporting Program No. 96-015.

B. DISCHARGE SPECIFICATIONS

1. Neither the treatment nor the discharge of wastes shall cause a pollution or a nuisance, as defined by the California Water Code, Section 13050.

2. All wells within 500 feet of the waste management units shall have sanitary seals which meet the requirements of the Yuba County Environmental Health Department or shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Board and to the State Department of Water Resources.

3. Landfills Nos. 2 and 3 shall not cause degradation of any waters of the State.

4. Fuel-spill remediated soils to be used as part of the foundation layer for the landfills shall have a leachable total petroleum hydrocarbon as diesel (TPH-D) concentration, using the DI-WET method, of less than or equal to 5mg/l, which shall be reduced by additional treatment at the landfill to 1 mg/l. Confirmation sampling using DI-WET method will be performed at the landfill to confirm that additional reduction in the concentrations has occurred.

C. FACILITY SPECIFICATIONS

Protection from Storm Events

1. Annually, prior to the anticipated rainy season but no later than **15 October,** any necessary erosion control measures shall be implemented and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the facility and to prevent surface drainage from contacting or percolating through wastes.

2. Precipitation and drainage control systems for the final cover system shall be designed, constructed and maintained to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 100-year, 24-hour precipitation conditions.

3. If in a 100-year floodplain, landfill units will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain or result in washout of solid waste so as to pose a hazard to human health and the environment.

4. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources will not contact or percolate through wastes, and will either be contained on-site or be discharged in accordance with applicable storm water regulations.

Supervision and Certification of Construction

5. All containment structures shall be designed and constructed under the direct supervision of a California registered civil engineer or a certified engineering geologist and shall be certified by that individual as meeting the prescriptive standards and performance goals of 23 CCR and the prescriptive standards and performance criteria of Part 258, 40 CCR (Subtitle D of the Resource Conservation and Recovery Act);.

6. All ground water monitoring and corrective action required for the landfill unit pursuant to 40 CFR, Part 258 will be designed, implemented and certified, as appropriate, by a qualified ground water scientist as specified in 40 CFR 258.50(f) and 23 CCR, §2550.7(e)(1).

D. RECEIVING WATER LIMITATIONS:

Water Quality Protection Standard

The Water Quality Protection Standard, as defined in 23 CCR, §2550.2 will consist of constituents of concern, their concentration limits, the point of compliance, and all water quality monitoring points. Constituents of concern will include all waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the landfill. Concentration limits in each monitoring medium will consist of background concentrations of each constituent of concern or concentrations greater than background pursuant to §2550.4 of 23 CCR. For each monitoring event, the Discharger will determine whether there is statistically significant evidence of a release from the landfills and whether the landfills are in compliance with the Water Quality Protection Standard using procedures specified in §2550.7(e) of 23 CCR (also 40 CFR 258.55 and App. II to Part 258).

E. CLOSURE SPECIFICATIONS FOR LANDFILL NO. 2 AND 3

1. At closure, Landfill No. 2 and 3 shall receive a final cover which is designed and constructed to function with minimum maintenance and consists, at a minimum, of a two-foot thick foundation layer which may contain waste materials, overlain by a one-foot thick clay barrier, and finally by a one-foot thick vegetative soil layer, or an engineered equivalent final cover system pursuant to Subsections 2510(b) and (c) of 23 CCR.

2. Clay barriers shall have a maximum hydraulic conductivity of 1×10^{-6} cm/s and a minimum relative compaction of 90 percent. Hydraulic conductivities of barrier materials shall be determined by laboratory tests using water. Hydraulic conductivities determined through laboratory methods shall be confirmed by approved field testing of the finished cap. Construction methods and quality assurance procedures shall be sufficient to ensure that all parts of the cap meet the hydraulic conductivity, moisture content, and compaction requirements. Proposed design parameters (e.g., soil type, Atterburg limits, moisture content, relative compaction), construction methods and quality assurance procedures for clay caps shall be used in the construction of a test pad prior to cap construction to ensure adequacy of the design, construction, and testing methods.

3. Design of the landfill cap will include a **Construction Quality Assurance Plan** which will:

   a. demonstrate that the landfill cap has been constructed according to the specifications and plans as concurred by the agencies;

   b. provide quality control on the materials and construction practices used to construct the waste management unit and prevent the use of inferior products and/or materials which do not meet the agencies concurred design plans or specifications;

   c. provide that construction methods and quality assurance procedures will be sufficient to ensure that all parts of the cap meet the hydraulic conductivity, moisture content and compaction requirements; and

   d. provide that hydraulic conductivities determined through laboratory methods will be confirmed by appropriate field testing, and the results will be submitted to the agencies prior to construction.

4. Any landfill cap constructed after the effective date of this Order shall be designed and constructed in accordance with 23 CCR and this Order and approved by the Board. Prior to construction of any landfill cap a final closure plan shall be submitted to Board staff for review and approval and include, but not be limited to, the engineered design plans for the landfill, the contract specifications, and a construction quality assurance (CQA) plan to verify that construction specifications will be met. Approval of the final closure plan shall be obtained from Board staff prior to construction of the landfill cap.

5. A final construction report shall be submitted for approval by Board staff after construction. The final construction report shall include, but not be limited to, as-built plans for the landfill cap, a CQA report with a written summary of the CQA program and all test results, analyses, and copies of the inspector's original field notes, a demonstration that the landfill cap has been constructed according to the specifications and plans as approved by the agencies, and certification as described in the Facility Specification for supervision and certification of construction.

6. Vegetation shall be planted and maintained over each closed landfill unit. Vegetation shall be selected to require a minimum of irrigation and maintenance and shall have a rooting depth not in excess of the vegetative layer thickness.

7. Closed landfill units shall be graded to at least a three-percent grade, or lesser grade if approved by the Executive Officer, and maintained to prevent ponding.

8. Closure of each waste management unit will be performed under the direct supervision of a California registered civil engineer or California certified engineering geologist.

9. The closed landfill will be provided with at least two permanent monuments, installed by a licensed land surveyor or by a registered civil engineer authorized to perform land surveying, from which the location and elevation of all wastes, containment structures, and monitoring facilities can be determined throughout the post-closure maintenance period.

10. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water will be designed and constructed to prevent such erosion.

11. Methane and other landfill gases will be adequately vented, removed from landfill units, or otherwise controlled to prevent the danger of explosion, adverse health effects, nuisance conditions, or the impairment of beneficial uses of water due to migration through the vadose (unsaturated) zone.

F. PROVISIONS

1. The Discharger shall comply with Monitoring and Reporting Program No. 96-015, which is attached to and made part of this Order.

2. The Discharger shall maintain waste containment facilities and precipitation and drainage controls, and shall continue to monitor any leachate from the landfill units, ground water, the vadose zone, and surface waters per Monitoring and Reporting Program No. 96-015 throughout the post-closure maintenance period.

3. The Discharger shall comply with the Standard Provisions and Reporting Requirements, dated September 1993, which are hereby incorporated into this Order. The Standard Provisions and Reporting Requirements contain important provisions and requirements with which the Discharger must comply. A violation of any of the Standard Provisions and Reporting Requirements is a violation of these waste discharge requirements.

4. If the Discharger, through a detection monitoring program, or the agencies find that there is statistically significant evidence for a new release from any landfill for any monitoring parameter or constituent of concern or significant physical evidence of a release from any landfill, the Discharger will notify the agencies or acknowledge the agencies finding in writing within seven days, and will implement verification procedures within 30 days, pursuant to §2550.7(e)(8)(E) of 23 CCR. Within 90 days, the Discharger will submit to the agencies the results of the resampling and either:

   a. demonstrate pursuant to §2550.8(k)(7) of 23 CCR that a source other than the landfill caused the evidence of a release, or that the evidence resulted from an error in sampling, analysis, or evaluation, or from natural variation in ground water, surface water, or the unsaturated zone; or

   b. establish an evaluation monitoring program, pursuant to §2550.9 of 23 CCR, to assess the nature and extent of the release from the landfill and to design a corrective action program meeting the requirements of §2550.10 of 23 CCR. Within 180 days of determining statistically significant evidence of a release, the Discharger will submit an engineering feasibility study pursuant to §2550.8(k)(6) for corrective action program necessary to meet the requirements of §2550.10 of 23 CCR.(40 CFR 258.54 and 258.55)

5. The Discharger will provide proof to the agencies **within sixty days after completing final closure** that the deed to the landfill facility property, or some other instrument that is normally examined during title search, has been modified to include, in perpetuity, a notation to any potential purchaser of the property stating that:

   a. the parcel has been used as a municipal solid waste landfill (MSWLF);

   b. land use options for the parcel are restricted in accordance with the post-closure land uses set forth in the post-closure plan and in SWDRs for the landfill.

6. The post-closure maintenance period will continue until the agencies determine that remaining wastes in the landfill will not threaten water quality.

7. The owner of the waste management facility will have the continuing responsibility to assure protection of usable waters from discharged wastes and from gases and leachate generated by discharged waste during the closure, and post-closure maintenance period of the landfills and during subsequent use of the property for other purposes.

8. The discharge will not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the waste management unit if such waste constituents could migrate to waters of the State—in either the liquid or the gaseous phase—and cause a condition of contamination, pollution, degradation, or nuisance.

9. The Discharger will develop and comply with a closure and post-closure maintenance plan, that complies with 40 CFR 258.60 and 258.61, with §2597 Article 8 of 23 CCR, and with Title 14 of the CCR.

10. The Discharger or persons employed by the Discharger will comply with all notice and reporting requirements of the State Department of Water Resources with regard to the construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with the Monitoring and Reporting Program, as required by Sections 13750 through 13755 of the California Water Code.

11. The Discharger will immediately notify the agencies of any flooding, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or of precipitation and drainage control structures.

12. The Discharger will notify the agencies in writing of any proposed change in ownership or responsibility for closure or post-closure maintenance of the landfill. This notification will be given 90 days prior to the effective date of the change and will be accompanied by a report and any technical documents that are needed to demonstrate continued compliance with these requirements.

13. Within 90 days from the effective date of this Order, the Discharger shall submit a Work Plan, including an implementation schedule, describing the proposed scope of work to be implemented to identify the source of the ground water contamination previously detected at Landfill No. 2. The proposed investigation should be capable of either determining if Landfill No. 2 is causing the ground water quality impairment, or demonstrating that an upgradient source other than the waste management unit has caused the evidence of ground water quality impairment.

14. The Discharger shall complete the tasks outlined in these WDRs and the attached Monitoring and Reporting Program No. 96-015 in accordance with the following time schedule:

	Task	Compliance Date
a.	**Closure Implementation Schedule for Landfills Nos. 2 and 3:**	
(1)	Submit final closure plan (Include CQA plan and construction schedule)	LF#3: 1 May 1996 LF#2: 1 Dec 1996
(2)	Complete landfill cover test pad construction and submit test pad certification report	LF#3: 1 Jun 1996 LF#2: 1 Jun 1997
(3)	Begin construction on final cover and drainage systems	LF#3: 15 Jul 1996 LF#2: 15 Jul 1997
(4)	Complete construction	LF#3: 15 Dec 1996 LF#2: 15 Dec 1997
(5)	Submit final construction report	LF#3: 1 Mar 1997 LF#2: 15 Feb 1998
b.	**Ground water monitoring network improvements:**	
(1)	Submit revised monitoring program in accordance with Article 5 of 23 CCR	LF#3: 30 Apr 1996 LF#2: 15 Mar 1997
(2)	Submit work plan for installation of ground water monitoring network improvements and for additional monitoring wells	LF#3: 30 Apr 1996 LF#2: 15 Mar 1997
(3)	Complete installation of approved ground water monitoring well(s)	LF#3: 1 Sep 1996 LF#2: 1 Sep 1997
c.	**Submit the following documents or reports:**	
1)	Report on Water Quality Protection Standard	LF#3: 15 Feb 1998 LF#2: 15 Feb 1999
(2)	Monitoring reports	LF#3: 1 Feb 1997 LF#2: 1 Feb 1998 Per MRP thereafter
(3)	A proposal for ground water, surface water and vadose zone pore fluid monitoring stations and parameters	LF#3: 30 Apr 1996 LF#2: 15 Mar 1997
(4)	Sampling and Analysis Plan	LF#3: 30 Apr 1996 LF#2: 15 Mar 1997
(5)	Work plan for Identifying Source of Ground Water Quality Impairment at Landfill No. 2	Within 90 days from the effective date of this Order.

15. The Discharger shall commence the ground water monitoring described in the attached Monitoring and Reporting Program No. 96-015 at each of the landfills upon the complete installation of the approved ground water monitoring well(s) at that landfill according to the above schedule. Prior to the initiation of the new monitoring program at each of the landfills, the existing ground water monitoring wells at each of the landfills shall continue to be sampled at intervals (semiannually) and for constituents as the wells were previously sampled for under the Installation Restoration Program as part of the Basewide Ground Water Monitoring Plan.

16. The Board will review this Order periodically and will revise these requirements when necessary.

17. The Discharger shall comply with all applicable provisions of 23 CCR and 40 CFR Part 258 that are not specifically referred to in this Order.

G. REPORTING REQUIREMENTS

1. The Discharger shall comply with the reporting requirements specified in this Order, in Monitoring and Reporting Program Order No. 96-015, and in the Standard Provisions and Reporting Requirements which are attached hereto and made part of this Order.

2. Within 90 days of establishing an evaluation monitoring program, the Discharger shall submit to the Board an amended Report of Waste Discharge pursuant to Section 2550.9(d) of 23 CCR. The amended Report of Waste Discharge shall address the establishment of a corrective action program pursuant to Section 2550.10 of 23 CCR.

I WILLIAM H. CROOKS, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 26 January 1996.

William H. Crooks

WILLIAM H. CROOKS, Executive Office

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Attachments

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. 96-015
FOR
THE UNITED STATES AIR FORCE
CLOSURE OF BEALE AIR FORCE BASE LANDFILLS NO. 2 AND NO. 3
CLASS III LANDFILLS
YUBA COUNTY

Existing monitoring well test data show that the past discharge from Beale Air Force Base Landfills No. 2 and 3 may have degraded ground water quality. This is a Detection Monitoring Program for Landfill No. 2 and 3 that shall be used to determine whether there is statistically significant evidence of a release from these waste management units. If this Detection Monitoring Program confirms that releases from the landfills have degraded water quality, an Evaluation Monitoring Program will be established in accordance with the requirements of California Code of Regulations, Title 23, Division 3, Chapter 15 (hereafter 23 CCR), Article 5, §2550.9. In that case, an amended Report of Waste Discharge and Engineering Feasibility Study shall be submitted to the Regional Board within 90 days of establishing an Evaluation Monitoring Program pursuant to 23 CCR §2550.9. If the Discharger successfully demonstrates, in accordance with the requirements of 23 CCR §2550.8., that releases from source(s) other than the landfill(s) have caused the release(s) found in the Detection Monitoring Program, the necessary ground water investigation and cleanup activities will be completed under the Base Installation Restoration Program in a manner consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). In that case, the Discharger shall submit to the Board within 90 days its plan for addressing the ground water.

Compliance with this Monitoring and Reporting Program, and with the companion Standard Provisions and Reporting Requirements, is ordered by Waste Discharge Requirements (WDRs) Order No. 96-015. Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements, constitutes noncompliance with the WDRs and with the Water Code, which can result in the imposition of civil monetary liability.

A. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the WDRs. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. A short discussion of the monitoring results, including notations or any water quality violations, shall precede the tabular summaries.

B. REQUIRED MONITORING REPORTS

1. Water Quality Protection Standard Report

The Discharger shall submit a report by **15 February 1998** for **Landfill No. 3** and by **15 February 1999** for **Landfill No. 2** which defines the Water Quality Protection Standard. If such a report has been previously submitted, the Discharger shall so notify the Board and identify the report, but shall also modify the report to add any new constituents of concern as required by Title 40, Code of Federal Regulations (hereafter 40 CFR) Part 258. The reports shall incorporate the results of the four previous quarters of sampling, and can be combined with the Annual Report for the first full calendar year of detection monitoring. The reports shall:

a. Identify all distinct bodies of ground water that could be affected in the event of a release from the landfill. This list shall include at least the uppermost aquifer underlying the landfill and any permanent or ephemeral zones of perched water underlying the landfill;

b. Demonstrate that the landfill's existing and proposed monitoring systems meet:

(1) the requirements of 40 CFR 258.51(a, c, and d) and 23 CCR 2550.7(b); and

(2) the requirements of 23 CCR 2550.7(c), if the landfill is in proximity to any affectable surface water body; and

(3) the requirements of 23 CCR 2550.7(d), if the landfill is overlying an unsaturated zone that can be monitored feasibly [only for dischargers whose waste discharge requirements, as of the effective date of this Order, have not been revised to incorporate the 1 July 1991, revisions to Article 5 of 23 CCR];

c. Include a map showing the monitoring points and background monitoring points and showing the point of compliance under 23 CCR 2550.5 (i.e., the downgradient boundary of the unit, with respect to the flow direction of ground water in the uppermost aquifer);

d. Estimate the compliance period under 23 CCR 2550.6;

e. Include a list of all monitoring parameters and constituents of concern (COC) and their concentration limits; and

f. Identify locations and methods of leachate sampling for detection of COCs.

2. Sampling and Analysis Plan

A revised sampling and analysis plan shall be submitted to Board staff **by 30 April 1996** for **Landfill No. 3** and **15 March 1997** for **Landfill No. 2** for approval. The sampling and analysis plan shall include specific methods for leachate, surface water, ground water, and vadose zone pore fluid water quality sample collection, handling, chain of custody control, analytical procedures, and field and laboratory quality assurance and quality control.

3. Proposed Ground Water And Vadose Zone Pore Fluid Monitoring Program

The Discharger shall submit by **30 April 1996** for **Landfill No. 3**, and **15 March 1997** for **Landfill No. 2**, a proposed revised ground water and vadose zone pore fluid monitoring system and program in accordance with 23 CCR. The water quality monitoring system and program shall be sufficient to demonstrate compliance, or lack thereof, with the Water Quality Protection Standard. Existing water quality monitoring stations and data can be proposed for incorporation in the revised monitoring system and program. The proposal shall include:

a. Proposed conceptual design and location of water quality monitoring points including those at the point of compliance (§2550.7);

b. Proposed monitoring parameters, constituents of concern, and their monitoring frequencies (§2550.7 and §2550.8);

c. Proposed concentration limits and/or methods for establishing concentration limits (§2550.4); and,

d. Proposed statistical methods for determining statistically significant evidence for a release from the landfills.

The Discharger shall also propose a monitoring system and program pursuant to §2550.10 of 23 CCR for determining the effectiveness of any corrective actions.

4. Detection Monitoring Report

The Discharger shall submit quarterly reports of the results of Detection Monitoring for the specified constituents under Monitoring Parameters and in Attachment A. Quarterly reports shall be due 30 calendar days after the end of the calendar quarter in which the samples were collected. Fourth quarter monitoring reports may be combined with the Annual Monitoring Summary Report for that calendar year.

5. Annual Monitoring Summary Report

The Discharger shall submit the Annual Monitoring Summary Report as specified in the Standard Provisions and Reporting Requirements. Annual Monitoring Summary Reports shall be due 45 calendar days after the end of the calendar year in which the samples were collected.

6. Constituents-of-Concern (COC) 5 Year Report

The Discharger shall submit reports of the results of the monitoring for the constituents of concern every 5 years. The COC Report may be combined with a Detection Monitoring Report or an Annual Summary Report having a reporting period that ends at the same time.

Standard Observations

Each monitoring report shall include a summary and certification of completion of all Standard Observations for the waste management unit, for the perimeter of the waste management unit, and for the receiving waters. The standard observations shall be performed on a weekly basis and shall include those elements as defined in the Standard Provisions and Reporting Requirements.

C. MONITORING

If the Discharger, through a detection monitoring program, or the Board finds that there is a statistically significant increase in indicator parameters or waste constituents over the water quality protection standards (established pursuant to Monitoring and Reporting Program No. 96-015) at or beyond the Points of Compliance, the Discharger shall notify the Board or acknowledge the Board's finding in writing within seven days, and shall immediately resample for the constituent(s) or parameter(s) at the point where the standard was exceeded. Within 90 days, the Discharger shall submit to the Board the results of the resampling and either:

a. a report demonstrating that the water quality protection standard was not, in fact, exceeded; or

b. an amended Report of Waste Discharge for the establishment of a verification monitoring program, per Section 2557 of 23 CCR, which is designed to verify that water quality protection standards have been exceeded and to determine the horizontal and vertical extent of pollution.

If the Discharger, through an evaluation monitoring program, or the Board verifies that water quality protection standards have been exceeded at or beyond the Points of Compliance, the Discharger shall notify the Board or acknowledge the Board's finding in writing within seven days. Within 180 days, the Discharger shall submit to the Board an amended Report of Waste Discharge for the establishment of a corrective action program, per Section 2558 of 23 CCR, which is designed to achieve compliance with the water quality protection standards.

D. REQUIRED MONITORING PROGRAMS

1. Detection Monitoring Program

For each monitored medium, all monitoring points assigned to detection monitoring and all background monitoring points shall be monitored at the frequencies listed in this Program for the monitoring parameters listed in this Program.

For any given monitored medium, a sufficient number of samples shall be taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.

Ground water sampling shall also include an accurate determination of the ground water surface elevation and field parameters (pH, temperature, electrical conductivity, turbidity) for that monitoring point or background monitoring point. Ground water elevations taken prior to purging the well and sampling for monitoring parameters shall be used to fulfill the ground water gradient/direction analyses required. For each monitored ground water body, the Discharger shall measure the water level in each well and determine ground water gradient and direction at least quarterly, including the times of expected highest and lowest elevations of the water level for the respective ground water body. Ground water elevations for all background and downgradient wells for a given ground water body shall be measured within a period of time short enough to avoid temporal variations in ground water flow which could preclude accurate determination of ground water gradient and direction. This information shall be included in the quarterly monitoring reports. Data analysis shall be performed as soon as the monitoring data are available.

2. Constituents-of-Concern 5-Year Monitoring Program

In the absence of evidence of a release being indicated, the discharger shall monitor all constituents of concern as follows:

The discharger shall sample all monitoring points and background monitoring points for each monitored medium for all COCs every fifth year, beginning with the summer of 1996 (first reporting period ends 31 September 1996), with subsequent COC monitoring efforts being carried out every fifth year thereafter alternately in the summer (reporting period ends 30 September) and winter (reporting period ends 31 March).

4. Surface Water Monitoring (Landfill No. 2 and No. 3)

Surface water samples shall be taken at upstream and downstream stations during the first storm of the rainy season which produces significant flow, and quarterly when water is present. Prior to completion of the final cover system, the surface water samples shall be analyzed for the monitoring parameters in Table I.

TABLE I - SURFACE WATER MONITORING PROGRAM

Parameter	Units	Frequency[1]
Field Parameters		
Temperature	°C	Quarterly
Specific Conductance	μmhos/cm	Quarterly
pH	pH units	Quarterly
Turbidity	Turbidity units	Quarterly
Dissolved Oxygen	mg/l	Quarterly
Flow Rate	Cfs	Quarterly
Monitoring Parameters		
Total Suspended Solids (TSS)	mg/L	Quarterly
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chlorides	mg/L	Quarterly
Sulfates	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Chemical Oxygen Demand (COD)	mg/l	Quarterly
Dissolved Iron	mg/l	Quarterly
Dissolved Manganese	mg/l	Quarterly
Additional Constituents for Landfill No. 2		
Volatile Organics (EPA Method 8260, See Attachment A)	mg/l	Quarterly
TPH - Gas	mg/l	Quarterly
TPH - Diesel	mg/l	Quarterly
Constituents of Concern		
Total Organic Carbon*	mg/L	5 years
Carbonate*	mg/L	5 years
Bicarbonate*	mg/L	5 years
Total Alkalinity*	mg/L	5 years
Oil and Grease	mg/L	5 years
Inorganics*(total recoverable metals) (See Attachment B for Method)	mg/L	5 years

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1 Check quarterly; sample when water is present.

* To be monitored quarterly for one year to determine a concentration limit.

TPH-Gas using prep method 5030 followed by method 8015 (modified) and TPH-Diesel using prep method 3510 followed by method 8015 (modified).

Surface water monitoring reports shall be submitted with the corresponding quarterly ground water monitoring and shall include evaluation of potential impacts of the facility on surface water quality and compliance with the Water Quality Protection Standard.

The Discharger shall monitor surface water samples only for those parameters and constituents specified in the General Permit for storm water runoff one year following completion of the final cover system, provided that the cover system is properly maintained and there is no indication of leachate migration to surface waters.

The Discharger shall submit a proposal for surface water monitoring stations by **30 April 1996** for **Landfill No. 3** and **15 March 1997** for **Landfill No. 2**.

5. Vadose Zone Monitoring (Landfill No. 2 and No. 3)

The Discharger shall submit a proposal for vadose zone pore fluid monitoring stations and parameters by **30 April 1996** for **Landfill No. 3** and **15 March 1997** for **Landfill No. 2**.

6. Ground Water Monitoring (Landfill No. 2 and No. 3)

Field and laboratory tests will be reported in the quarterly monitoring reports. All "Monitoring Parameters" will be graphed so as to show historical trends at each well.

The ground water surface elevation (in feet and hundredths, M.S.L.) in all wells will be measured on a quarterly basis and used to determine the velocity and direction of ground water flow. This information will be displayed on a water table contour map and/or ground water flow net for the site and submitted with the quarterly monitoring reports.

The monitoring network will consist of background monitoring wells and downgradient monitoring wells. The Discharger shall submit a proposal for ground water monitoring stations and parameters by **30 April 1996** for **Landfill No. 3** and **15 March 1997** for **Landfill No. 2**. Until such time as the proposed monitoring program is approved, samples will be collected from the wells at the frequency and for the parameters specified in Table II.

TABLE II - GROUND WATER MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Temperature	°C	Quarterly
Ground Water Elevation	Ft. & hundredths, MSL	Quarterly
Specific Conductance	μmhos/cm	Quarterly
pH	pH units	Quarterly
Turbidity	Turbidity units	Quarterly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chlorides	mg/L	Quarterly
Sulfates	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Volatile Organic Compounds (EPA Method 8260, See Attachment A)	μg/L	Quarterly
TPH - Gas	mg/l	Quarterly
TPH - Diesel	mg/l	Quarterly
Constituents of Concern		
Total Organic Carbon*	mg/L	5 years
Carbonate*	mg/L	5 years
Bicarbonate*	mg/L	5 years
Total Alkalinity*	mg/L	5 years
Volatile Organic Compounds (EPA Method 8260, See Attachment A)	μg/L	5 years
Semi-Volatile Organic Compounds (EPA Method 8270)	μg/L	5 years
Organochlorine Pesticide, PCBs (EPA Method 8080)	μg/L	5 years
Chlorophenoxy Herbicides (EPA Method 8150)	μg/L	5 years
Inorganics (dissolved)* (See Attachment B for Method)	mg/L	5 years

* To be monitored quarterly for one year to determine a concentration limit.

D. WATER QUALITY PROTECTION STANDARD

The Water Quality Protection Standard (Standard) shall consist of the following elements:

a. Constituents of Concern;
b. Concentration Limits;
c. Monitoring Points;
d. Points of Compliance;
e. Compliance Period.

In addition to these elements, monitoring parameters shall also be established.

1. Constituents of Concern

a. For Landfill Nos. 2 and 3:

(1) The "COC list" (list of constituents of concern required under 23 CCR 2550.3) shall include all constituents listed in Tables I, and II,(above), the Waste Discharge Requirements No. 96-015, and all constituents listed in Attachment B. The discharger shall monitor all COCs every five years, or more frequently as required under the detection monitoring program.

(2) For each Attachment B constituent that is newly added to the landfill's COC list due to this order, the discharger shall establish a reference background value by analyzing at least one sample each quarter from each Background Monitoring Point for a period of at least one year, beginning with the date of this Program. Once this reference set of background data is collected, the discharger shall include it as a separate, identified item in the next monitoring report submittal.

2. Concentration Limits

The concentration limit for any given constituent of concern or monitoring parameter in a given monitored medium (e.g., the uppermost aquifer) at the landfills shall be as follows, and shall be used as the basis of comparison with data from the monitoring points in that monitored medium:

a. The background value established by the Board for that constituent and medium;

b. The constituent's background value, established anew during each reporting period using only data from all samples collected during that reporting period from the background monitoring points for that monitored medium. Either:

(1) The mean (or median, as appropriate) and standard deviation (or other measure of central tendency, as appropriate) of the constituent's background data; or

(2) The constituent's MDL, in cases where less than 10% of the background samples exceed the constituent's MDL; or

c. A concentration limit greater than background, as approved by the Board for use during or after corrective action.

3. Monitoring Points

Landfill No. 2 has nine existing ground water monitoring wells as shown in Attachment D. Landfill No. 3 has four existing ground water monitoring wells and four proposed monitoring wells as shown in Attachment E. The monitoring points shall be as determined in the proposed monitoring program to be submitted no later than **30 April 1996** for **Landfill No. 3** and **15 March 1997** for **Landfill No. 2**, or shall be established as required by 23 CCR. Until such time as the proposed monitoring program is approved, ground water monitoring points at Landfill No. 2 shall consist of monitoring wells 06A001MW, 06A002MW, 06L003MW, 06L004MW, 06L005MW, 06L006MW, and 06C001MW. Until such time as the proposed monitoring program is approved, ground water monitoring points at Landfill No. 3 shall consist of monitoring wells 15A001MW, 15A002MW, 15A003MW, and 15A004MW.

4. Points of Compliance

The points of compliance, for each landfill, either shall be as determined in the approved monitoring program to be submitted no later than **30 April 1996** for **Landfill No. 3** and **15 March 1997** for **Landfill No. 2**, or shall be established as required by 23 CCR.

5. Compliance Period

The compliance period for the landfills shall be the number of years equal to the active life of the landfills plus the closure period. Each time the Standard is exceeded (i.e., a release is discovered), the landfill begins a compliance period on the date the Board directs the Discharger to begin an Evaluation Monitoring Program. If the Discharger's Corrective Action Program (CAP) has not achieved compliance with the Standard by the scheduled end of the compliance period, the compliance period is automatically extended until the landfill has been in continuous compliance for at least three consecutive years.

6. Monitoring Parameters

Beginning on the effective date of this order, the Discharger shall analyze water samples from each water-bearing medium separately for the monitoring parameters listed in Tables I and II, and shall test the resulting data using either the statistical or non-statistical methods listed in the Standard Provisions (or alternative methods the Board finds meets the requirements of 23 CCR 2550.7(e)(6-10) and 40 CFR 258.53):

a. Parameters that use statistical methods:

(1) pH, total dissolved solids, specific conductivity, chloride, sulfate, and nitrate nitrogen;

(2) Each VOC (listed in Attachment A) that equals or exceeds its respective MDL in at least ten percent of the samples taken from the background monitoring points for a monitored water-bearing medium (i.e., surface water body, aquifer, perched zone, or soil-pore liquid) during a given reporting period; and

b. Parameters that uses non-statistical method:

(1) The composite monitoring parameter "VOC_{water}", consisting of all VOCs listed in Attachment A.

(2) TPH-Gas using prep method 5030 followed by method 8015 (modified) and TPH-Diesel using prep method 3510 followed by method 8015 (modified).

Statistical data-comparison methods typically used to detect the migration of wastes from a waste management unit cannot be used in cases where the constituent to be monitored has a background concentration which does not exceed the constituent's detection limit in at least ten percent of the background samples. In such cases, an alternative non-statistical testing methodology is necessary which is sensitive, reliable, and not prone to falsely identifying a release.

E. LANDFILL MONITORING

The Discharger shall perform site monitoring activities for the landfill units in accordance with the Final Closure and PostClosure Maintenance Plans. The Discharger shall maintain records of seeps observed within and below the landfill units. Potential leachate seeps shall be sampled for the constituents listed under "Surface Water Monitoring" per the approved Water Quality Monitoring Plan.

The Discharger shall implement the above monitoring program on the effective date of this Order.

Ordered by: William H. Crooks
WILLIAM H. CROOKS, Executive Officer

26 January 1996
(Date)

JSR:jsr/lsb:05Feb96

Attachment A

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

- pH
- Total Dissolved Solids
- Specific Conductivity
- Chloride
- Sulfate
- Nitrate nitrogen

Constituents included in VOC_{water} (by USEPA Method 8260):

- Acetone
- Acrylonitrile
- Benzene
- Bromochloromethane
- Bromodichloromethane
- Bromoform (Tribromomethane)
- Carbon disulfide
- Carbon tetrachloride
- Chlorobenzene
- Chloroethane (Ethyl chloride)
- Chloroform (Trichloromethane)
- Dibromochloromethane (Chlorodibromomethane)
- 1,2-Dibromo-3-chloropropane (DBCP)
- 1,2-Dibromoethane (Ethylene dibromide; EDB)
- o-Dichlorobenzene (1,2-Dichlorobenzene)
- p-Dichlorobenzene (1,4-Dichlorobenzene)
- trans-1,4-Dichloro-2-butene
- 1,1-Dichloroethane (Ethylidene chloride)
- 1,2-Dichloroethane (Ethylene dichloride)
- 1,1-Dichloroethylene (1,1-Dichloroethene; Vinylidene chloride)
- cis-1,2-Dichloroethylene (cis-1,2-Dichloroethene)
- trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
- 1,2-Dichloropropane (Propylene dichloride)
- cis-1,3-Dichloropropene
- trans-1,3-Dichloropropene
- Ethylbenzene
- 2-Hexanone (Methyl butyl ketone)
- Methyl bromide (Bromomethene)

Methyl chloride (Chloromethane)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
4-Methyl-2-pentanone (Methyl isobutylketone)
Styrene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,1,1-Trichloethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC-11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

Attachment B

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Inorganics (by USEPA Method):

Antimony	6010
Barium	6010
Beryllium	6010
Cadmium	6010
Chromium	6010
Cobalt 6010	
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Arsenic	7061
Lead	7421
Mercury	7470
Nickel	7520
Selenium	7741
Thallium	7841
Cyanide	9010
Sulfide	9030

Volatile Organics (USEPA Method 8260):

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bis(2-ethylhexyl) phthalate
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)

1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dribromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC 12)
1,1-Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1-Dichloroethylene (1,1-Dichloroethene; Vinylidene chloride)
cis-1,2-Dichloroethylene (cis-1,2-Dichloroethene)
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
1,3-Dichloropropane (Trimethylene dichloride)
2,2-Dichloropropane (Isopropylidene chloride)
1,1-Dichloropropene
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Ethylbenzene
Hexachlorobutadiene
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Isodrin
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane, Methylchloroform
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC-11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semivolatile Organics (USEPA Method 8270 - base, neutral, & acid extractables):

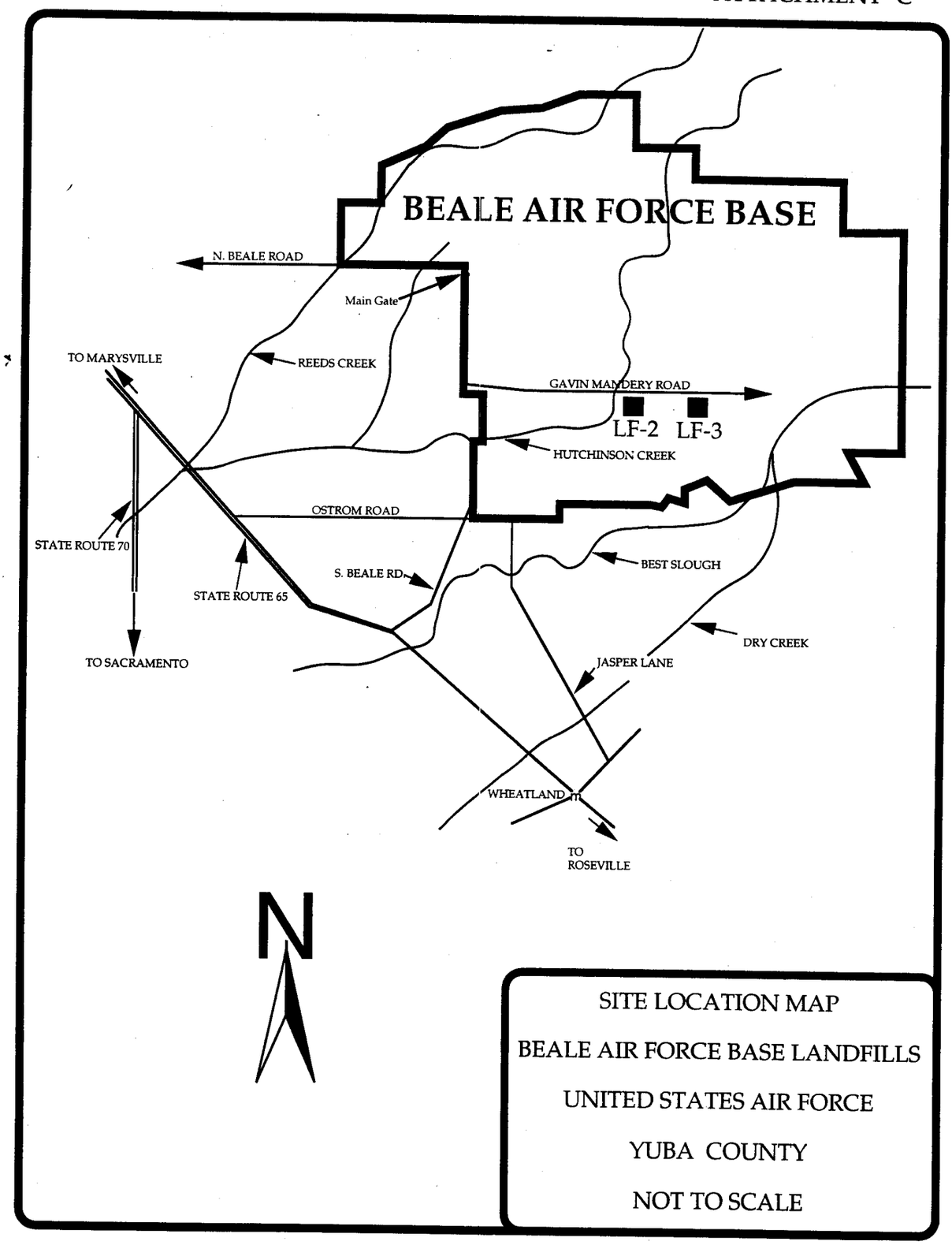
Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methyethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)
Chlordane
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol (4-Chloro-3-methylphenol)
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl phenyl ether
Chrysene
o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)
4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin

Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimehtylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methacrylate
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
Naphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)

p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
N-Nitrosodiethylamine (Diethylnitrosamine)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitrosodiphenylamine (Diphenylnitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)
N-Nitrosomethylethylamine (Methylethylnitrosamine)
N-Nitrosopiperidine
N-Nitrosospyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
1,2,4-Trichlorobenzene
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

Organophosphorus Compounds (USEPA Method 8141):
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)
Dimethoate
Disulfoton
Methyl parathion (Parathion methyl)
Parathion
Phorate
2,4-D (2,4-Dichlorophenoxyacetic acid)
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

ATTACHMENT "C"



SITE LOCATION MAP

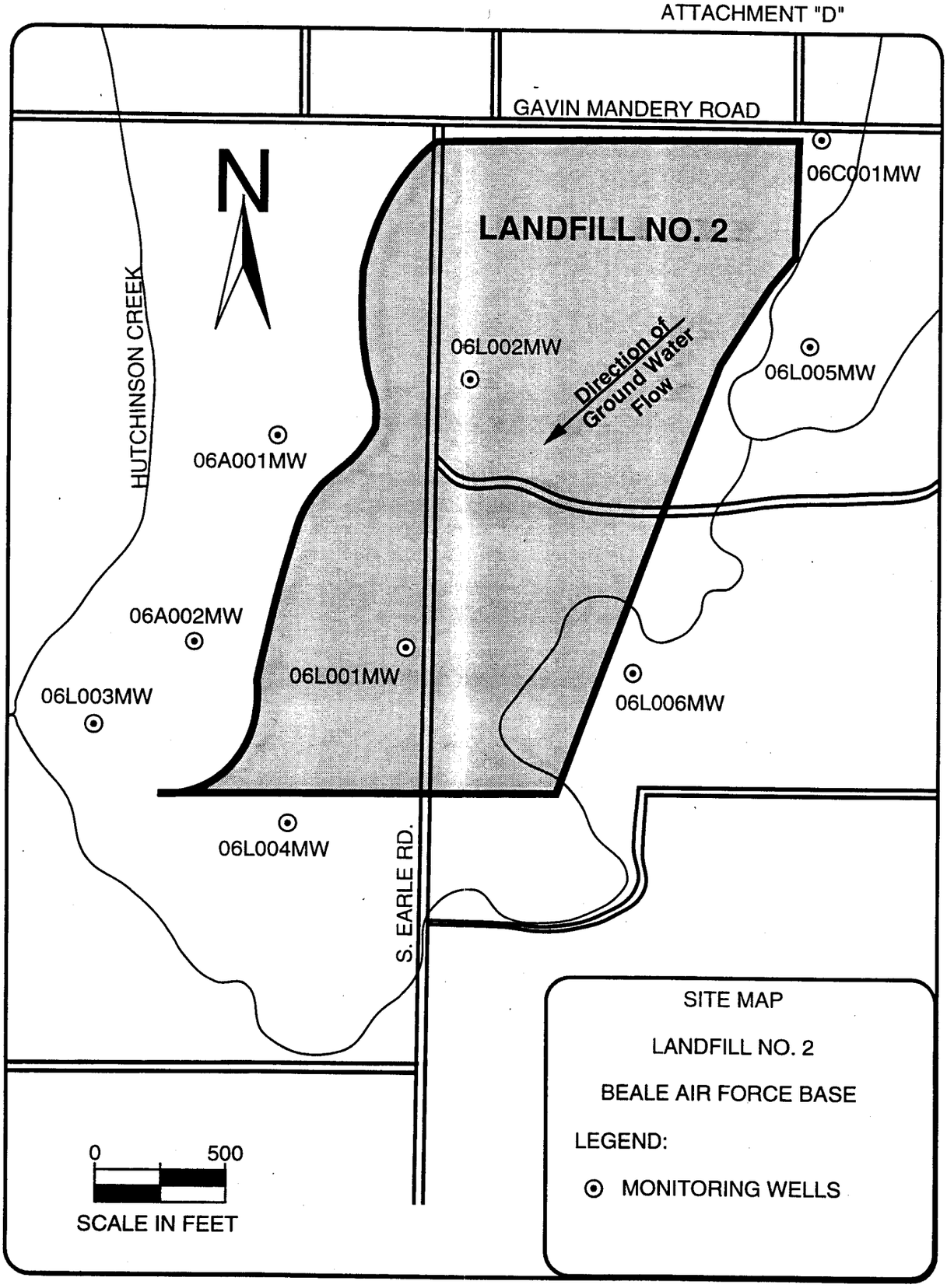
BEALE AIR FORCE BASE LANDFILLS

UNITED STATES AIR FORCE

YUBA COUNTY

NOT TO SCALE

ATTACHMENT "D"



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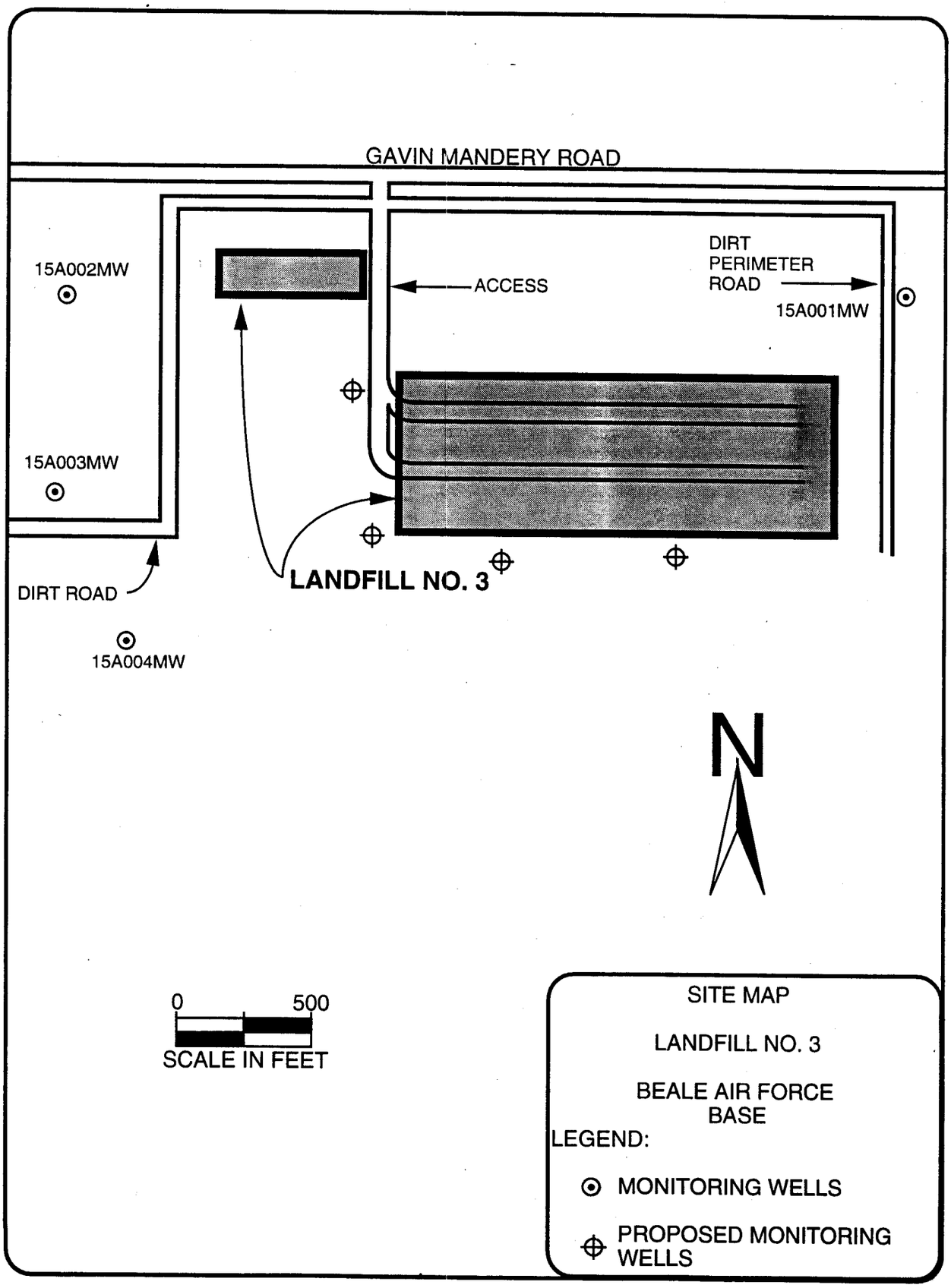

INFORMATION SHEET

UNITED STATES AIR FORCE
CLOSURE OF BEALE AIR FORCE BASE LANDFILLS NO. 2 AND NO. 3
CLASS III LANDFILLS, YUBA COUNTY

Beale Air Force Base (AFB) consists of about 23,000 acres and is 10 miles east of Marysville and 45 miles north of Sacramento. Beale AFB lies entirely within Yuba County. This base opened in 1942 as the U.S. Army's Camp Beale. It was used for tank training, as a personnel replacement depot, a prisoner-of-war encampment, and as a site for a 1,000-bed hospital. In 1948, the Air Force assumed custody of Camp Beale and changed the name to Beale AFB.

Beale has been operating two waste management units under Waste Discharge Requirements Order No. 79-12. Landfill No. 2 and Landfill No. 3 are along Gavin Mandry Road in the southern portion of the base. These two landfills were permitted as Class II-2 solid waste disposal sites and designated as "Area A and C" in the 1979 WDR permit. "Area B" the intermediate area, was considered inadequate for use because of susceptibility to flooding. The former permit transposes currently to a Class III permit.

Landfill No. 2 previously denoted as "Area A", occupies 56 acres and was used primarily for refuse disposal from the early 1950s until 1980. Refuse was deposited in 15 foot deep trenches. Between 1967 and 1978, about 380 cubic yards of sludge from the photowaste treatment plant were discharged. Petroleum chemicals were also discharged in reportedly small quantities. More recently this landfill was used to dispose of dirt, wood, and other inert construction and grounds maintenance debris. The site is about 85% filled. Landfill No. 2 does not have an engineered liner system or leachate collection system. A ground water monitoring network around Landfill No. 2 currently consists of nine monitoring wells. Contaminated soil, soil gas, ground water, and surface water have been inconsistently encountered at Landfill No. 2 and consists primarily of fuel hydrocarbons, chlorinated hydrocarbons, and phenols.

Landfill No. 3 is classified as a Class III waste management unit which received waste until October 1993. About 35 acres have been used for waste discharge out of the 184 acres that were originally allocated. The trench and fill method of operation was used to bury refuse and resulted in trenches about 35 feet wide, 15 feet deep, and 300 feet long. About 63,000 cubic yards of compacted domestic garbage and refuse have been accepted annually since 1980. Landfill No. 3 does not have an engineered liner system or leachate collection system. Diesel and gasoline have been detected in soil at the landfill during past investigations. Past investigation has also detected dichloromethane, 1,1,1-trichloroethane, 1,2-dichloroethane, trichloroethene, and tetrachloroethene in soil gas samples from the landfill. The monitoring network around Landfill No. 3 consists of three downgradient wells and one upgradient. The downgradient wells are greater than 1200 feet from the site. Diesel and arsenic have been detected in ground water samples collected in 1989. Surface water is not present near Landfill No.3.

Three landfills, in addition to Landfills No. 2 and 3, have been identified at Beale AFB. Cleanup and investigation of these landfills are currently being done under the Installation Restoration Program (IRP). Under the IRP the Air Force plans to identify and remediate problems caused by past management of hazardous wastes at military facilities. The IRP is designed to comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

In addition to closure of Landfill No. 2 and 3, Federal Subtitle D requirements for municipal solid waste landfills have been adopted. Therefore, it is necessary to amend the waste discharge requirements and monitoring and reporting program for Landfills Nos. 2 and 3.

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